

TOPS® FlashBox™



TOPS FlashBox 1.1

Release Notes

These notes supplement the information contained in the FlashBox *Installation Guide*. Please read these notes carefully before you begin.

New Features

- **Support for newer Macintosh models**
FlashBox 1.1 adds support for the Macintosh SE/30, IIX and IICX.
- **Autoload feature**
FlashBox 1.1 contains a new FlashBox init that will automatically load FlashTalk if the FlashBox hardware is attached to your Macintosh. If you want to keep the FlashBox hardware attached to your Macintosh, but not load the FlashTalk software, hold down the option key while booting your Macintosh.
- **FlashCheck Error Fixed**
In FlashBox 1.1, there was an occasional error where FlashCheck would report a larger number of "Total Active Nodes" than actually existed on the network. This error will no longer occur, and the number of "Total Active Nodes" will be accurate with FlashBox 1.1.

Update Instructions

To update to FlashBox 1.1, run the FlashTalk Installer, and click the INSTALL button. FlashBox Install will remove FlashBox 1.0 before installing FlashBox 1.1.

Note: In order to gain all the benefits of FlashBox 1.1, you must update ALL Macintoshes (except 512KEs) on your FlashTalk network, not just your SE/30, IIX and IICX machines (If you have any 512KE machines running the DB-9 version of Flashbox 1.0, these machines should not be updated).

If you have renamed your FlashTalk driver, then the update procedure will not remove the old version of FlashBox. Please do not rename your FlashTalk driver. See *Installation* section of these notes to find what FlashTalk driver should be installed for your type of machines.

Accelerator Boards

FlashBox currently supports the following accelerator boards on the Macintosh SE:

- GCC HyperCharger
- Radius Accelerator 16
- Radius Accelerator 25

See *Installing FlashBox Software, Chapter 2 of the FlashBox Installation Guide* for information on FlashBox installation with accelerator boards. Your accelerator board driver must be turned on for the FlashBox to work properly following installation.

Installation

Depending on the type of Macintosh (and accelerator board, if any) you are using with FlashBox, the FlashTalk Installer (see *Installing FlashBox Software, Chapter 2 of the FlashBox Installation Guide*) will copy a different FlashTalk driver file into the System folder of your startup disk. Table 1 shows which FlashTalk driver file is needed for which Macintosh:

Table 1. FlashTalk Driver Files Needed for Different Macintoshes

Macintosh Type	Accelerator	Driver File
Macintosh 512KE	None	FlashTalk*
Macintosh Plus	None	FlashTalk
Macintosh SE	None	FlashTalk
Macintosh SE	GCC HyperCharger	FlashTalkII
Macintosh SE	Radius 16 & 25	FlashRadius
Macintosh SE/30	None	FlashTalkII
Macintosh II, IIx, IIcx	None	FlashTalkII

*Make sure you use 512KE version of FlashBox

If you are having trouble running FlashTalk, check the System folder of your Macintosh startup disk to see if it contains the correct FlashTalk driver for your hardware configuration.

Important Notice Regarding Network Wiring, Connectors, and Termination:

To attain maximum performance with FlashBox, all computers and devices on the network should be able to communicate at FlashTalk rate. See *Chapter 1 of the FlashBox Installation Guide*. (Note: this does *not* apply to AppleTalk printers).

Since FlashTalk provides high performance communication, it pushes your LocalTalk or compatible network to the limit. If your

physical network is in any way marginal (marginal cabling or connectors, improper termination or a marginal network configuration), FlashTalk may not perform properly. See FlashTalk Communication, *Chapter 1* of the *FlashBox Installation Guide* and the FlashTalk Network Specifications below:

Maximum network length:

Using TOPS TeleConnectors
or PhoneNET connectors
and compatible cabling: 600 feet

Using Apple connectors
and LocalTalk cabling: 400 feet

Suggested Wiring: 24 guage twisted-pair
unshielded

Preferred Network configuration: Serial bus (daisy-chain)

Maximum Number of Connections: 32 in one zone

If you experience problems, please check the *FlashBox Installation Guide, Appendix A, Troubleshooting*.

Note: FlashBox does *not* work with Ethernet cabling; you must have EtherTalk software and an Ethernet card to run Ethernet.

Installing FlashBox on a Macintosh with a Single Floppy Disk Drive and No Hard Drive.

If you are installing FlashBox software on a single-floppy-drive Macintosh, the FlashTalk installer will require you to perform a large number of disk swap cycles to complete the procedure. To avoid this test of athletic endurance, you can, instead, install FlashBox software on your startup disk from a hard drive Macintosh on your network. It is a slightly more complicated procedure, but less physically taxing. Perform the following steps:

1. **Copy your FlashBox diskette to a folder on your hard drive Macintosh.**
Be sure to copy the files to a folder and not onto the desktop, otherwise the FlashTalk installer will not work properly.
2. **Perform steps 3 through 6 for installing FlashBox**
See Installing FlashBox Software, *Chapter 2* of the *FlashBox Installation Guide*, except run the FlashTalk installer from the hard drive rather than from the FlashBox Installation disk.

Note: Make sure the target disk is a startup disk with a System folder and System files.

3. **Check the files in the System folder of your target startup disk.**

You need to check that the FlashTalk driver file installed is the correct one for the type of single-floppy-drive Macintosh you will be using the FlashBox startup disk with. Use Table 1 on the first page of these release notes.

4. **If the driver file is not the correct one, delete it and copy the correct one from the hard disk into the System folder on the startup disk.**

Compatibility Issues

- **BackDrop & AppleShare**

These inits redraw the screen, hiding the FlashTalk icon when you start up your computer.

- **Font/DA Juggler**

This init is drawn over the FlashTalk icon, partly obscuring it when you start up your computer. Using Font/DA Juggler Plus resolves the problem.

- **R-Watcher and Guardian**

These inits cannot be loaded into memory when you install FlashTalk. Remove them from your System Folder, and restart your Macintosh. After installing FlashTalk, move them back into the System Folder and restart your Macintosh.

- **Liaison**

You cannot use FlashTalk on a machine running Liaison 1.0. You can install and use FlashTalk on a machine running Liaison 2.0, but it will run at AppleTalk rates. However, it will prevent the performance degradation which might occur if you place a machine running Liaison on a FlashTalk network without a FlashBox or repeater. (See AppleTalk-only Devices below). Liaison 2.0.3 fully supports FlashTalk, and will pass communication at FlashTalk rates. Additionally, Liaison provides an init called "Network Tuner" to be installed on the other Macs on your network. This init is incompatible with FlashTalk, and must be removed.

- **ModuNet TeleConnectors**

ModuNet TeleConnectors do not support FlashTalk data rates.

- **Vaccine 1.0**

This init (used to detect the presence of viruses) is not compatible with the FlashTalk Installer. However, Vaccine 1.01 is compatible; we suggest you contact CE Software (1854 Fuller Road, P.O. Box 65580, Des Moines, IA 50265) for this version.

FlashCheck Testing

- **Macintosh Plus and Mac 512KE**

You will not be able to use FlashCheck to test FlashTalk communication between FlashTalk-capable devices and a Macintosh Plus or Mac 512KE on your network (you will get the message, "Unable to echo"), unless you do the following: Copy the **AppleTalk** file on your FlashBox diskette to the System folder on your Mac Plus or Mac 512KE and then restart the Macintosh.

AppleTalk-only Devices

AppleTalk-only devices may degrade FlashTalk performance, as discussed in FlashTalk Compatibility, *Chapter 1* of the *FlashBox Installation Guide*. The following devices, if used on a FlashTalk network should be isolated from the FlashTalk network by a repeating device:

Hayes InterBridge

Kinetics FastPath III, IV

Cayman Gator Box

Macintosh Computer running Liaison 1.0 software

For more information, request TOPS Technical Note 1020: *How to Isolate AppleTalk-only Devices from a FlashTalk Network*. Other Apple-Talk-only devices are being tested and will be added to the above list as appropriate.

Correction to the Installation Guide

On page 40, the last paragraph should read: "Only Macintosh Pluses and Macintosh 512KE's with original ROMs (Read-only memory chips) should be unable to echo. If you experience this problem, copy the AppleTalk file from your FlashBox diskette to the System Folder on the Plus or 512KE, and restart the Plus or 512KE."

TOPS[®]

FlashBox[™]

Installation Guide



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Acknowledgements

TOPS would like to recognize the following people for their contributions to the development of FlashBox and/or this manual:

Carrie Requist
Don Melton
Tim Fredel
John Vitek
Pat Taylor
Dan Cobb
Gideon Levit
Debra Jarcho

Seth Neiman
Diane Ely
Mike Rogers
Kent Swisher
Sharon McCormick
Bob Upshaw
Bruce Linde
Pflash Pflaumer

Eric Savage
Rick Cumings
Greg Mercurio
Val Silva
Al Weinrub
Kevin Hamidi
Rey Bernardo
Steve Galletly

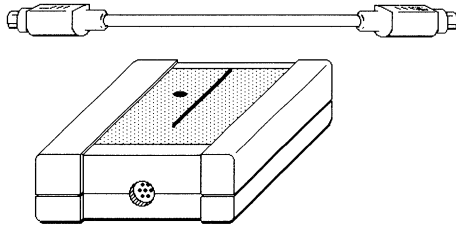
Preface

Congratulations on your purchase of the TOPS FlashBox™! We believe that FlashBox can significantly improve your network performance and productivity.

Your TOPS FlashBox Package

Please take a moment to check that you've received the following items in the package:

- **One TOPS FlashBox and cable:**



- **One power supply:**



- **A velcro strip.**
- **One 800K installation disk.**
- **This installation guide.**

- **TOPS Registration Card**

Fill in your registration card and send it to TOPS.

Registered users are eligible for free technical support and are notified about future product updates and enhancements.

- **Customer Support Guide**

This guide describes all of the TOPS customer support

services and how they are made available to registered users.

If an item is missing, please advise the dealer who originally sold you the package with the missing parts.

About this Guide

This guide provides you with information to help you understand your TOPS FlashBox hardware and software and how to use it.

Organization of the Guide

The material in this manual begins with basic information about FlashTalk™ and progresses through the stages of installing and using FlashBox.

Before You Begin

Chapter 1. Introduces you to FlashBox and to FlashTalk communication.

Installation

Chapter 2. Provides step by step instructions for installing FlashBox and the FlashTalk software as well as a quick installation guide for advanced users.

FlashBox Diagnostics

Chapter 3. Introduces you to FlashCheck, which enables you to verify that your FlashBox and others on the network are working properly. Also explains the function of the red indicator light.

Troubleshooting

Appendix A. Contains troubleshooting help.

Appendix B. Contains error messages.

Glossary

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Typeface Conventions

This guide uses the following typeface conventions:

- This typeface (Times 10 pt.) is used for normal text.
- **This typeface** (Helvetica 9 pt. bold) is used for the names of menus, dialog boxes, windows, to indicate the name of a menu option, or any other screen or keyboard option for you to select. For example:

click on **Publish**

- *This typeface* (Times 10 pt. italic) is used for titles of figures and tables, examples, emphasis, and for book titles or chapter names.

This is the *only* situation in which...

- **This typeface** (Times 10 pt. bold) is used to indicate steps or processes which must be done in sequence, notes, and warnings.

1. **Make a backup copy of your FlashBox installation disk**

A **Warning** message indicates a caution about actions to avoid.

A **Note** message indicates an important detail about using FlashBox.

Before You Begin

This chapter introduces FlashBox and discusses FlashTalk communication.

The original AppleTalk™ area network (LAN) was developed to enable you to share a LaserWriter™ among several Macintoshes. With the introduction of TOPS networking software, you could, in addition, share files between Macintosh™, PC and UNIX™ stations on a network. However, if you've used AppleTalk networking, you may have experienced delays while waiting for network communication to take place. The relatively slow rate of AppleTalk communication begins to produce bottlenecks as network traffic increases. FlashBox was designed to improve network performance on heavily loaded networks.

What FlashBox Does

FlashBox is a device which provides your Macintosh with FlashTalk™ capability. This enables your Macintosh to carry on FlashTalk communication with other FlashTalk-capable devices. FlashTalk data transmission takes place at 770K bits per second, compared to AppleTalk, which takes place at 230K bits per second.

FlashTalk was originally introduced for the TOPS FlashCard™, a network interface card for IBM PC and compatible computers. Now, with FlashBox, your Macintosh can also achieve the higher network performance of FlashTalk. Because of the higher data transfer rate of FlashTalk, network performance is maintained even as network traffic increases. With FlashTalk, more computers can have quick access to the network than with AppleTalk.

FlashTalk Compatibility

To attain maximum performance with FlashTalk, all computers and devices on a network should communicate at FlashTalk rate.

In this regard there are three categories of FlashTalk compatibility:

- **FlashTalk-capable devices** are capable of sending and receiving at FlashTalk transmission rates and are able to handle FlashTalk data. Examples of this are FlashBox, the TOPS FlashCard™, the Hercules Network Graphics Plus™ card, and the TandyLink™ card. Other network devices will be FlashTalk-capable in the future.
- **FlashTalk-compatible devices** pass FlashTalk data at 770K bits-per-second, but do not generate FlashTalk communication. They will not degrade FlashTalk performance. FlashTalk-compatible devices include the TOPS Repeater™, the TOPS TeleConnector™, the Farallon PhoneNET Plus™ connector and the Farallon StarController™.
- **AppleTalk-only devices** are those which can *only* communicate at 230K bits-per-second.
 - AppleTalk printers, such as the Apple LaserWriter™ series (and compatibles) and ImageWriter II™, can be used on a FlashTalk network without degrading performance.
 - Bridges and gateways, such as the Hayes InterBridge™ and the Kinetics FastPath™ (AppleTalk side) will degrade FlashTalk performance unless isolated from the FlashTalk network by a TOPS repeater.
 - Other AppleTalk-only devices may degrade performance. Check the FlashBox *Release Notes* for more information.

TOPS is working with other developers to overcome the limitations of AppleTalk-only devices and make all network devices FlashTalk-capable or compatible.

Note: AppleTalk devices transmit data at AppleTalk rate even on a FlashTalk network. Do not connect FlashBox to AppleTalk-only devices; they cannot presently use FlashTalk software or hardware.

FlashTalk Communication

Since FlashTalk provides high performance communication, it pushes your LocalTalk or compatible network to the limit. If your physical network is in any way marginal (marginal cabling or connectors, improper termination or a marginal network configuration), FlashTalk may not perform properly. An excessive number of errors may be encountered by FlashTalk. In such cases,

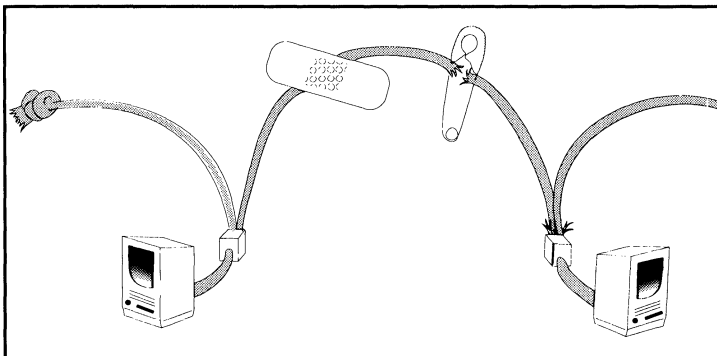


Figure 1-1. Marginal Networks Hurt FlashTalk Performance

the FlashBox will revert to AppleTalk communication rates. Should the error rate go down, the FlashBox will again use FlashTalk communication.

When a FlashBox begins communicating with another device on the network, the FlashBox first checks whether that device is FlashTalk-capable; this process is called *arbitration*.

You may notice relatively slower communication until the arbitration process is finished. For example, when you pull-down the TOPS Desk Accessory, there may be a momentary waiting period while the FlashBox checks the file servers for FlashTalk or AppleTalk capability.

If the other device is FlashTalk-capable, the FlashBox uses FlashTalk communication; if not, the FlashBox and the other device communicate at the regular AppleTalk rate. When the FlashBox tries to communicate with a device a second time, it does not need to go through arbitration, since it remembers which devices are FlashTalk-capable.

While FlashTalk increases the data transfer rate, it does not affect other processes which may limit network performance. It has no effect, for example, on the amount of time an application spends accessing memory, accessing a disk, or refreshing the screen display.

For optimum networking performance, we recommend using a server (or servers) with a high-speed disk drive and a fast processor (a Macintosh II, a Macintosh SE with an accelerator board, or an 80386-based PC) on a FlashTalk network. For networks which exceed 6 computers, we also recommend that, if possible, you distribute the load among a number of servers on your network.

Other TOPS Networking Products

A number of TOPS products can be used in conjunction with TOPS FlashBox to enhance your network environment:

- **TOPS/Macintosh™** is the TOPS networking software for Macintosh computers. Provides file server and client capability, and includes TOPS Spool™ and TOPS Translators™.
- **TOPS/DOS™** is the TOPS networking software for PCs and compatibles. Provides file server, print server and client capability, plus FlashTalk communication.
- **TOPS/Sun™** is the TOPS networking software for Sun Workstations. Provides file server and printer server capability.
- **TOPS NetPrint™** lets you print from within DOS applications to an Apple ImageWriter II™ (with AppleTalk option), LaserWriter, or compatible printer on a TOPS network. Includes PostScript™ translator and print spooling capability.
- **TOPS FlashCard** is TOPS' LocalTalk interface card. It supports FlashTalk transmission speeds.
- **TOPS Repeater** lets you extend the total length of a TOPS LocalTalk network beyond the normal limits, as well as letting you set up branches off a daisy-chain network arrangement.
- **TOPS TeleConnector** provides the physical link between a network station and the network cabling. Use it to connect every device, including computers and printers, to the network.

Installing FlashBox

This chapter begins with system requirements for FlashBox. It then provides step-by-step instructions for connecting FlashBox hardware and installing FlashBox software, followed by a quick startup guide for advanced users. The last section describes how to de-select or remove FlashBox.

Hardware and Software Requirements

Other than FlashBox, you will need the following hardware and software in order to successfully use this product:

- **Computer:**
A Macintosh Plus, Macintosh SE, or Macintosh II.
- **System Software:**
System 4.1/Finder 5.5, or later, and one 800K or larger floppy drive. Select **About the Finder** under the Macintosh Apple Menu to find out what System and Finder version you have. If you have an older version of the System and Finder, please contact your Apple dealer. FlashBox is MultiFinder-compatible.
- **Memory:**
The FlashTalk software uses about 11K of memory.
- **Disk Space:**
The FlashTalk software (including FlashCheck) uses about 55K of disk space.

- **Connector:**
A TOPS TeleConnector, LocalTalk, or PhoneNET Plus connector:

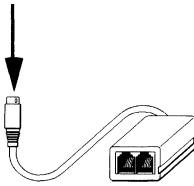


Figure 2-1. DIN-8 Connector

Note: If you are using Farallon connector products, be sure to use the PhoneNET Plus™ connectors, not the PhoneNET connectors.

- **Cabling**
You need LocalTalk or compatible cabling (depending on the type of connector you are using) to connect your Macintosh stations to your network. We recommend TOPS TeleConnectors and twisted-pair wire.

Note: Because FlashBox moves data at the FlashTalk rate, marginal network cabling may cause problems. We recommend that your network length not exceed 600 feet if you are using TOPS TeleConnectors or compatible connectors and cabling. If you are using LocalTalk connectors and cabling, your network length should not exceed 400 feet. You can use a device such as the TOPS Repeater, however, to extend the length of your network beyond these limits.

In addition, the cabling must be properly terminated and stations daisy-chained together. While other cabling configurations might support AppleTalk communication, they may not support FlashTalk communication. If this is the case, higher network performance will not be realized with your FlashBox.

Installing FlashBox Hardware

This section gives you detailed information on FlashBox hardware installation. After you've finished with the hardware, go on to the next section, "Installing FlashBox Software." If you are *very* familiar with the basics of LocalTalk networking and the Macintosh, you can skip these two sections and skip to the Quick Startup Guide.

1. Shut down your Macintosh.

Pull down the **Special** menu, select **Shut Down**, and turn off your Macintosh. If there is a LocalTalk (or compatible) connector hooked to the Macintosh, disconnect it from the printer port. It will not be connected up until after completion of the software installation procedure.

2. Connect the end of the FlashBox cable labeled "TOPS" (8 pins) to the Macintosh printer port.

Figure 2-2 shows you the proper connection:

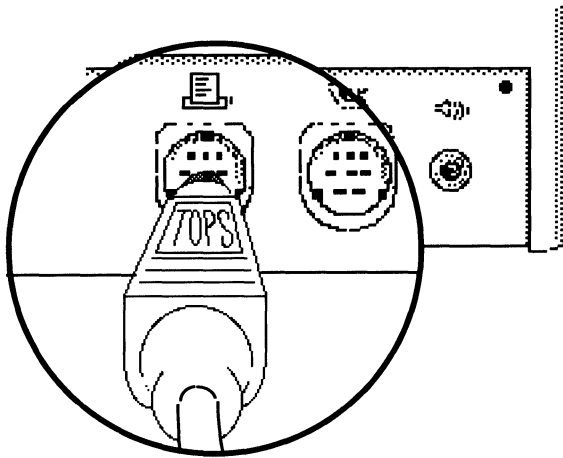


Figure 2-2. Connect to Macintosh Printer Port

3. Connect the other end of the FlashBox cable (6 pins) to the FlashBox. See Figure 2-3.)

Make sure the cable is connected to the FlashBox port labeled "Computer" on the sticker.

We recommend that you secure your FlashBox to the Macintosh or to your table top using the velcro strip. Don't let the FlashBox hang over the edge of the table, or it might disconnect from the Macintosh.

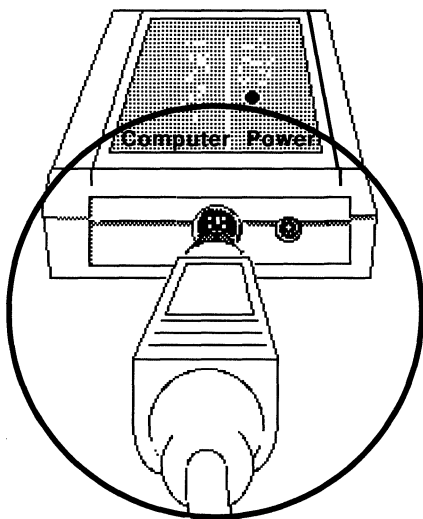


Figure 2-3. Connect to "Computer" Port of FlashBox

Note: Do not connect your LocalTalk connector to your FlashBox until after the software installation procedure is completed.

4. Plug in the power. (See Figure 2-4.)

Plug the FlashBox power supply into an electrical outlet, and plug the round power plug into the FlashBox port labeled "Power."

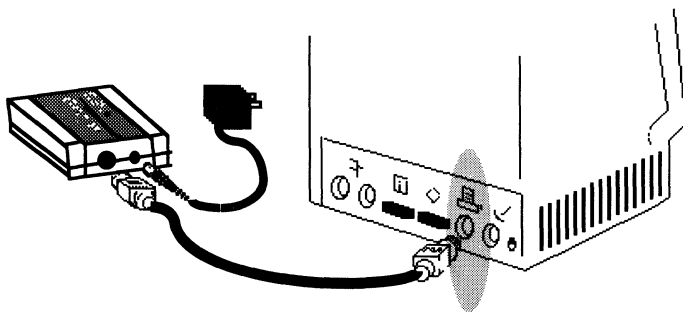


Figure 2-4. Proper FlashBox connection

Note: You will notice an LED (light-emitting diode) on top of FlashBox does not light when the power is plugged in. This light *only* flashes when FlashBox is transmitting.

Installing FlashBox Software

1. Make a backup copy of the FlashBox installation disk.

Store the original in a safe place. If necessary, please refer to your *Macintosh User's Guide* for more information on copying disks.

2. Start up your Macintosh

Wait until the desktop comes up and insert the FlashTalk Installer disk in the internal drive. If you are installing on a floppy-only Macintosh, start it up with a startup disk (a disk with a System folder on which you will install FlashTalk.)

For a single floppy-only Macintosh, start it up with a startup disk, wait for the desktop to appear, eject the startup disk, and insert the FlashTalk Installer disk.

Warning: Do not install FlashTalk with MultiFinder active. If you are running MultiFinder, pull-down **Set Startup** from the Special menu, select **Finder**, and restart your Macintosh.

3. Double-click on Install FlashTalk

If you are installing on a Macintosh II or later Macintosh, go on to step 4.

If you are installing FlashTalk on a Macintosh Plus or SE, a screen will appear (see Figure 2-5) giving you the option to

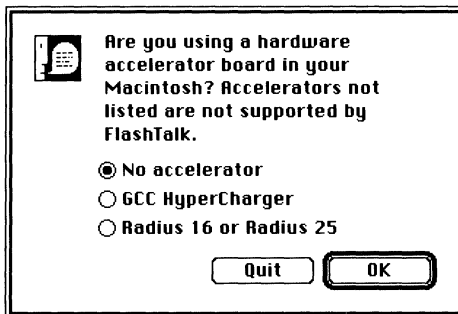


Figure 2-5. Accelerator Screen.

indicate whether there is a hardware accelerator installed, and, if so, which one. If you have an accelerator not listed on screen, see the *TOPS FlashBox Release Notes*. Select either **No accelerator** or the type of accelerator that is installed, and click **OK**.

4. In a moment, you will see the installer screen, **Figure 2-6**. Click on **Drive** to select the disk on which you will install FlashTalk. If you are installing on a startup disk, insert it into the internal drive.

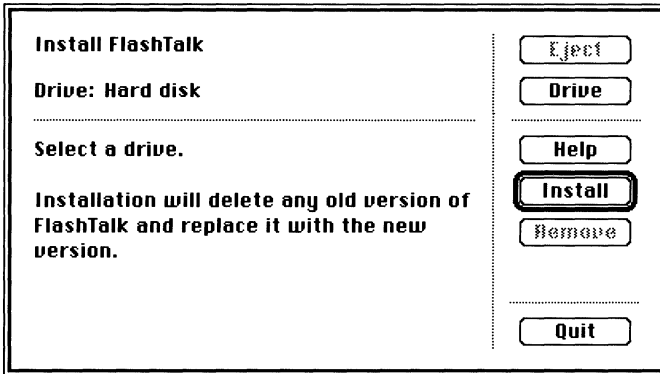


Figure 2-6. FlashTalk Installer Screen, Before Installation

5. Click on **Install** to begin installation.
At this point the Installer copies the FlashTalk file into the System folder of your Macintosh.

When the process is complete, you should see the message: "Successful installation completed. You may remove FlashTalk, select another drive, or quit."

If the Installer is unsuccessful, please turn to Troubleshooting, *Appendix A*.

If you wish, you may now insert additional startup disks on which to install FlashTalk.

Note: FlashTalk cannot be installed across the network, since the Macintosh must be disconnected from the network during installation.

6. When you are finished installing FlashTalk click Quit.
7. Plug your LocalTalk or compatible connector into the FlashBox port labeled "Network," as shown in figure 2-7:

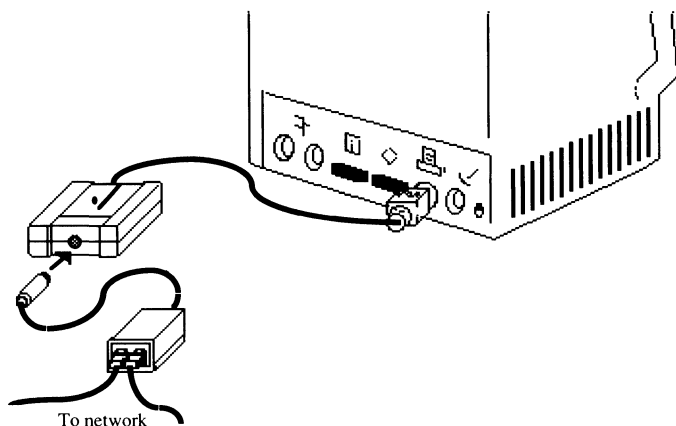


Figure 2-7. Plug in the LocalTalk Connector after FlashBox Installation

8. **Click Restart in the dialog box, Figure 2-8.**
FlashTalk installation modifies the System file so your computer must be restarted to complete the installation.



Figure 2-8. Restart Macintosh

On startup you will see the FlashTalk icon in the lower left hand corner of your Macintosh screen (see Figure 2-9), indicating that FlashTalk is now active.



Figure 2-9. FlashTalk Icon After Selection

Congratulations, your Macintosh is now FlashTalk-capable!

Note: If you see a crossed-out FlashTalk icon on startup, see Troubleshooting, *Appendix A*, for solutions.

Quick Startup Guide

If you're in a hurry to get your FlashBox up and running and you're *very* familiar with the basics of LocalTalk networking and the Macintosh, this section is for you.

1. Make a backup copy of the FlashBox installation disk.

Warning: Do not install FlashTalk with MultiFinder active.

2. Shut down and turn off your Macintosh.

If there is a LocalTalk (or compatible) connector hooked to the Macintosh, disconnect it from the printer port. It will not be reconnected until the completion of the installation procedure.

3. Connect the end of the FlashBox cable labeled "TOPS" (8 pins) to the Macintosh printer port.

4. Connect the other end of the FlashBox cable (6 pins) to the FlashBox.

Make sure the cable is connected to the FlashBox port labeled "Computer." We recommend that you secure FlashBox to the Macintosh or to your table top using the velcro strip. Don't let the FlashBox hang over the edge of the table, or it might disconnect from the Macintosh.

Note: Do not connect your LocalTalk connector to your FlashBox until after the software installation procedure is completed.

5. Plug in the power.

Plug the FlashBox power supply into an electrical outlet, and plug the round power plug into the FlashBox port labeled "Power."

Note: You will notice an LED (light-emitting diode) on top of the FlashBox. This light *only* flashes when FlashBox is transmitting.

6. Start up your Macintosh.

Wait until the desktop comes up and insert the backup FlashTalk Installer disk in the internal drive. If you are installing on a floppy-only Macintosh, start it up with a startup disk (a disk with a System folder on which you will install FlashTalk).

7. Double-click on Install FlashTalk.

If you are installing on a Macintosh II or newer Macintosh, go on to step 8. If you are installing FlashTalk on a Macintosh Plus or SE, a screen will appear giving you the option to indicate whether there is a hardware accelerator installed, and, if so, which one. Select either **No accelerator** or the type of accelerator that is installed, and click **OK**.

Note: FlashTalk cannot be installed across the network, since the Macintosh must be disconnected from the network during installation.

8. Click on the Drive button to select the disk on which to install FlashTalk.

Click on the **Install** button. You should see the message “Successful Installation completed.” When you are finished installing FlashTalk, quit the Installer. If the installation failed, see Troubleshooting, *Appendix A*, for suggestions.

9. Plug your LocalTalk or compatible connector to the FlashBox port labeled “Network.”

10. Click Restart.

Congratulations, your Macintosh is now FlashTalk-capable!

Note: If you see a crossed-out FlashTalk icon on startup, see Troubleshooting, *Appendix A*, for solutions.

Selecting and De-selecting FlashTalk

FlashTalk can be selected and de-selected as described below:

- **Selecting FlashTalk**

To manually select FlashTalk, pull-down the **Control Panel** from the Apple menu, scroll to the **Network** icon and select it. You will see the dialog box shown in Figure 2-10:

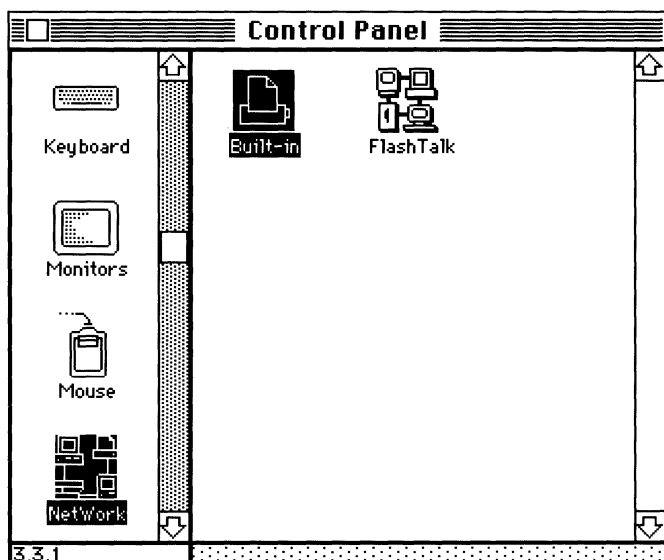


Figure 2-10. Select Network Icon.

Select **FlashTalk**, and click **OK** when you see the dialog box, Figure 2-11:

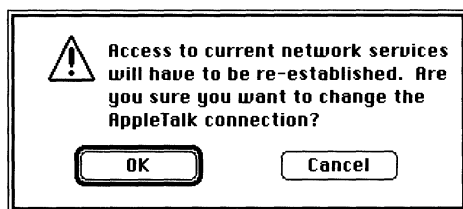


Figure 2-11. Change connection

Close the **Control Panel**, and pull-down **Restart** from the Special menu. FlashTalk is now selected.

- **De-selecting FlashTalk at start up**
Restart your Macintosh while holding down the **option** key. In a moment you will see the dialog box in Figure 2-12:



Figure 2-12. De-selecting FlashTalk

Release the **option** key, and click **Disable FlashTalk**. You will see the dialog box in Figure 2-13:

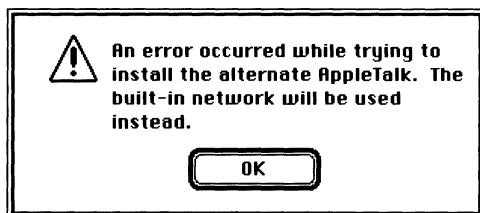


Figure 2-13. Alternate AppleTalk Install Error

Click **OK**. The Macintosh will run at the AppleTalk rate for this and subsequent sessions until you reselect FlashTalk. When you start up your computer, you will see the crossed-out FlashTalk icon.

- **De-selecting using the Control Panel Network icon**
Select the **Control Panel**, scroll to the **Network** icon and click on it. Select the **Built-in** icon, close the **Control Panel** and restart your Macintosh. You are now running at the AppleTalk rate for this and subsequent sessions until you reselect FlashTalk.

Disconnecting FlashBox

Follow the above instructions and shutdown your Macintosh. Then disconnect the FlashBox from the printer port, disconnect the LocalTalk connector from the FlashBox, and plug the connector into the Macintosh printer port. Startup your Macintosh, run the FlashTalk Installer and click **Remove**.

Special Network Situations

The following section covers some concerns in using FlashBox with TOPS and explains how to install FlashBox on an AppleShare server.

TOPS and FlashBox

FlashBox has been engineered to be fully compatible with TOPS networking software. There are, however, a few things to keep in mind as you use TOPS with FlashBox:

- If you de-select FlashTalk and select AppleTalk, you should immediately restart your Macintosh. Otherwise, stations on

the network will disappear from the File Servers list in the TOPS Desk Accessory.

- If you wish to de-select FlashTalk, hold down the **option** key on startup and follow the directions in the section called De-selecting FlashTalk. Release the **option** key; if you continue to hold it down, a dialog box will appear asking you to “Uninstall TOPS?” See the *TOPS/Macintosh* manual for more information on uninstalling TOPS.
- If you pull-down the TOPS Desk Accessory and the Macintosh freezes, check to make sure that your FlashBox is connected to a power outlet, and that the power plug is securely connected to the FlashBox at the “Power” label.
- When you are using the TOPS Desk Accessory, stations may momentarily disappear from the File Servers list. If you double-click on File Servers or the name of your zone, any such stations, as well as those which have recently signed-on to the network, will appear.

Installing Flashbox on an AppleShare Server

To install FlashBox on an AppleShare (Version 2.01) server, follow the steps below. You can install FlashBox on AppleShare clients by following the steps described earlier in this chapter.

1. **Copy all the files on your FlashBox diskette except FlashCheck to a startup floppy disk (a disk with a System and Finder) to create a FlashTalk startup disk.**
2. **Shutdown your AppleShare server.**
3. **Connect FlashBox as described in *Chapter 2, Installing FlashBox Hardware*, in the *FlashBox Installation Guide*.**
4. **Restart your AppleShare Server Macintosh using the startup disk you created in step 1.**
5. **Install FlashTalk on the AppleShare Server Macintosh by following steps 3 through 8 in the section Installing FlashBox Software of this chapter.**

FlashBox Diagnostics

This chapter explains how to verify that FlashBox is running at the FlashTalk rate.

Other than increased performance of your network, you won't really notice FlashBox. It works transparently in the background, and you may even forget that it's there. You will simply reap the benefits of a more efficient network.

You can check the functioning of your FlashBox by monitoring the red indicator light on top of the box and by using a diagnostic test called FlashCheck. These tools are discussed in the following two sections.

The Red Indicator Light

On top of the FlashBox there is a small red LED (Light Emitting Diode).

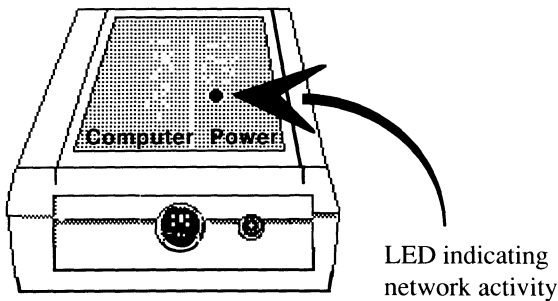


Figure 3-1. Position of the Red Indicator Light

Whenever your Macintosh is sending data to another station on the network, the light will flash. The light flashes whether or not your Macintosh is running at the FlashTalk rate. The light will *only*

flash when your Macintosh is sending packets of data, such as when you pull down the TOPS Desk Accessory or send an electronic mail message.

Note: The light is *not* an indication of whether or not your FlashBox is powered-up.

If you know that your Macintosh is trying to communicate with another network station, and the light isn't flashing, then:

- The signal isn't reaching your FlashBox, or
- The FlashBox isn't receiving power, or
- The FlashBox isn't functioning properly

If you experience any of these problems, see *Troubleshooting, Appendix A*, for more information.

FlashCheck

FlashCheck is a utility which enables you to look more closely at network communication. FlashCheck consists of two parts, one to test that your local Macintosh has FlashBox correctly installed, and the other to test the communication between your local Macintosh and other FlashTalk-capable devices.

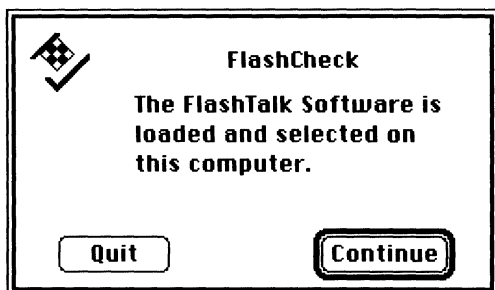
The first part of FlashCheck consists of two pass/fail tests. FlashCheck will pass both these tests if the FlashBox software and hardware are both correctly installed and active on your local Macintosh.

If FlashCheck passes these local tests, it then lets you look at remote communications between your Macintosh and other FlashTalk-capable nodes on the network (such as other FlashBox-equipped Macintoshes, or PCs with either the TOPS FlashCard, Hercules Network Graphics Plus card or TandyLink card).

Note: Using FlashCheck will temporarily slow down your network, because FlashCheck sends and receives thousands of packets of data.

FlashCheck: Local Test

Double-click on the **FlashCheck** icon. FlashCheck will check to see that the FlashTalk software is installed correctly. If FlashTalk is active, you will see the following dialog box:



If you want to go on to check your FlashBox hardware, click **Continue**. If you want to quit and return to the desktop, click **Quit**. If you see an error message, see "Local Test Fails" later in this section.

FlashCheck next checks your FlashBox hardware. If it finds the FlashBox hardware attached and ready for use, you will see a second dialog box:



FlashCheck has now verified that your local Macintosh has both FlashBox hardware and software installed properly. To check communication with other FlashTalk stations, click **Continue**, and follow the instructions under "FlashCheck: Remote Test," later in this section.

(To go back to the desktop, click **Quit**. If you see an error message, see "Local Test Fails" below.)

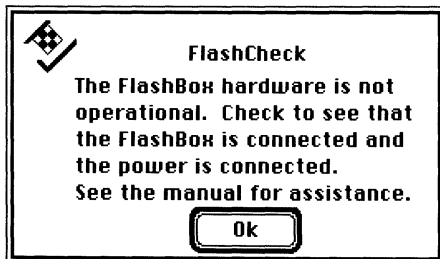
Local Test Fails:

If FlashCheck fails to find the FlashTalk software, you will see the following dialog box:



Click **OK**. You will need to recheck your installation. Make sure that FlashTalk is selected in the Control Panel and that there is a FlashTalk file in the System folder. Restart your Macintosh.

If FlashCheck fails to find the FlashBox hardware, you will see the following dialog box:



Click **OK**. Check whether the FlashBox is securely connected to the Macintosh printer port, and check that it is powered-up. Then run FlashCheck again.

FlashCheck: Remote Test

If your Macintosh station passes the local test, you can test communication with other FlashTalk stations on your network. (If you have quit from FlashCheck you will need to double click on FlashCheck again and run through the local test.)

After you have passed both the local tests discussed above, you will see the following dialog box:



Click **OK** to find all the FlashTalk-capable devices, or **Quit** to return to the desktop.

FlashCheck then checks all the stations (or LocalTalk nodes) in your zone to find the number of FlashTalk nodes and total number of active nodes (nodes which have registered their names on the network).

You will see a screen similar to Figure 3-2.

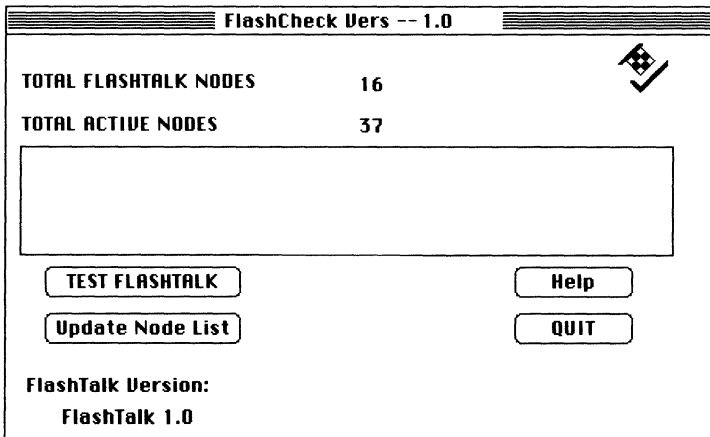


Figure 3-2. FlashCheck Report Screen

(After FlashCheck has finished looking for nodes, you can quit to the desktop, or click **Update Node List**, which will refresh the number of active and FlashTalk nodes. **Help** gives you on-screen guidance on using FlashCheck. You can also see the FlashTalk version in the lower left-hand corner of the screen.)

Note: Your Macintosh is not counted in the “Total FlashTalk Nodes” or “Total Active Nodes” lists.

To Test communication with a remote FlashTalk Node:

1. Click TEST FLASHTALK

You will see a screen like Figure 3-3:

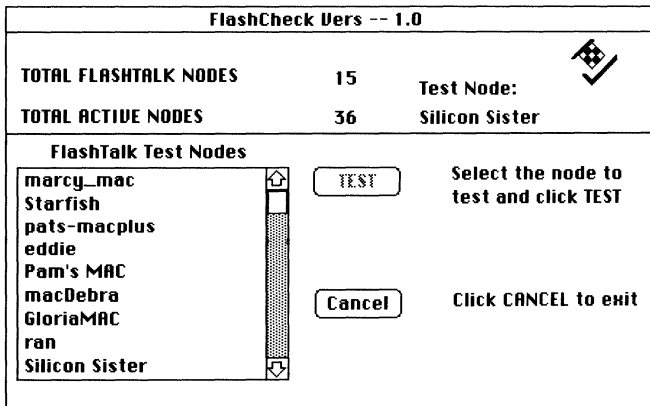


Figure 3-3. FlashCheck Node Test Screen

Node names of the following types are displayed on this screen:

- The TOPS name which stations supply when they sign on to the network.
- Other names or serial numbers which stations may use to sign on to the network.
- Some nodes may not have a name; these nodes will display their AppleTalk node number, which is between 1 and 254.

Note: If the total number of Flashtalk nodes is less than you expect and not all of the node names are listed, check the unlisted nodes to make sure that FlashTalk is properly installed on each of them and that FlashTalk is selected in the Control Panel of each.

2. **Select the name of a FlashTalk node and click TEST**

FlashCheck sends packets of data to the destination node and waits for a response. If a packet does not return or if the data is changed, an error is recorded. See Figure 3-4.

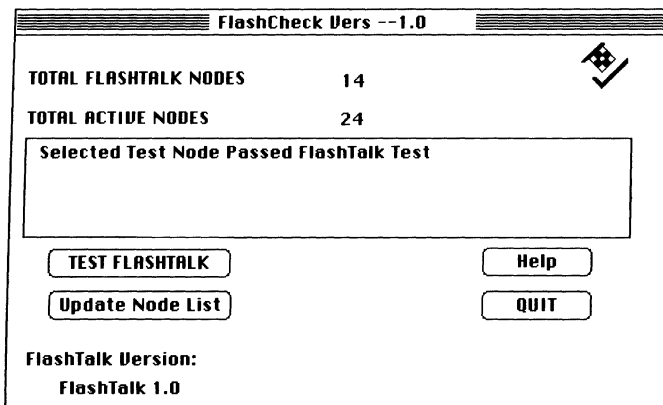


Figure 3-4. Node Test Report Screen

If you see the message: “Selected Test Node Passed FlashTalk”, FlashTalk communication between your station and that node is taking place without error.

If FlashCheck determines that there are a significant number of errors, however, you will see an error message. Please refer to “Remote Test Fails” for more information on these messages.

(You may click **TEST FLASHTALK** to test another node, or click **Quit** to end your session with FlashCheck.)

Remote Test Fails:

If FlashCheck encounters any errors when it tests a node, it will report an error message. The following is a list of these messages, with possible solutions for you to try.

- **Selected Test Node is Not Responding. Update Node List and Select a test node.**

If you update the node list and the error still occurs, check that the station you are testing is actually operational on the network. If the remote node is a Macintosh, try the steps in “FlashCheck: Local Test” to make sure that the test node is actually FlashTalk-capable. If the remote node is a PC, make sure that FlashTalk is enabled, and that the PC is operational on the network.

- **Network wiring is marginal for FlashTalk between these nodes. Check that the wiring, line termination, and distances between the computers are within recommendation.**

Check for proper termination, total network length (a maximum distance of 600 feet with TOPS TeleConnectors and PhoneNET or compatible connectors, 400 feet with LocalTalk), or an improperly setup repeater or star network (see Troubleshooting, *Appendix A*).

- **Network wiring is unable to support FlashTalk speeds between these nodes. Check that the wiring, line termination, and distances between the computers are within recommendations.**

This error should only occur on a network with very low-grade wiring or connectors, poor termination, passive stars, or excessive distances between nodes (see Troubleshooting, *Appendix A*).

- **Selected Test Node is not able to echo. Select a different test node.**

Only Macintosh 512KEs or Pluses with original ROMs (Read-only memory chips) should be unable to echo (data sent from one station on the network to another was not echoed back). If you experience this problem, copy the **AppleTalk** file from the FlashBox disk to the System Folder on the Macintosh 512KE or Plus and restart that Macintosh.

A

Troubleshooting

During use or installation of FlashBox you may occasionally encounter difficulties. This appendix offers some guidelines on diagnosing such difficulties and provides some solutions to commonly encountered problems.

The first step is to figure out the nature of your problem. If you are getting a FlashTalk or FlashCheck error message, turn to *Appendix B*, which provides information on TOPS error messages. If you are getting other error messages, or something is just not working the way you think it should, then check the first section, “Diagnosing Your Problem.” This will tell you which of the other sections of this appendix to consult.

If you already know which section your problem falls into, go directly to that section of this appendix to see if your problem, or a similar one, listed.

If you are unable to resolve your problem with the help provided in this troubleshooting guide, then refer to the section on TOPS Technical Support to review the information you need to have handy when you call us for more assistance.

- **Diagnosing Your Problem**
- **Getting Started**
- **FlashBox Hardware**
- **Marginal Communications**
- **Using TOPS with the FlashBox**
- **TOPS Technical Support**

Diagnosing Your Problem

The first step is to figure out what kind of a problem you are having. Read down through the list of questions below. If the answer to any of the following questions is “yes,” then go to the section indicated. If not, then go on to the next question.

- Are you having trouble getting the FlashTalk software installed on your hard drive or floppy drive Macintosh?
See **Getting Started**
- Are you having trouble getting FlashTalk to load on startup?
See **Getting Started**
- Is the FlashBox hardware failing to work the way you think it should?
See **FlashBox Hardware**
- Are other stations failing to show up on the network?
See **Marginal Communications**
- Does FlashTalk seem slower than you might expect?
See **Marginal Communications**
- Are you having problems using TOPS with the FlashBox?
See **Using TOPS with the FlashBox**

Diagnostic Tips

If your Macintosh is unable to recognize other devices on the network, you may have a cabling or network configuration problem. To isolate the problem, make a small network consisting of only two Macintoshes. If the Macintoshes are able to communicate in this configuration, then your larger network has a cable or connector that is not working properly, or there is a problem with the network configuration.

If all of your cabling and connectors are fine, then check to make sure your network is terminated correctly and that the network configuration is within the total length limits of FlashTalk (a maximum distance of 600 feet with TOPS TeleConnectors, PhoneNET Plus, or compatible connectors and cabling, and 400 feet with LocalTalk or compatible connectors and cabling. You can use a device such as the TOPS Repeater, however, to extend the length of your network beyond these limits.)

Getting Started

The Installer Fails

- The disk on which you are attempting to install may be full. FlashTalk needs at least 20K of free disk space to install successfully.
- If you installed FlashTalk under MultiFinder, install FlashTalk under the Finder, and restart your Macintosh.
- Make sure that all the necessary FlashTalk files are on the FlashTalk disk: FlashTalk, FlashTalk II, FlashTalk INIT, Network.
- You may have a defective FlashBox disk. Copy the files to another newly-initialized disk. Run the Installer again. If it still fails, run the Installer on a different Macintosh. If the Installer fails again, call TOPS Technical Support.
- Disconnect the LocalTalk (or compatible) cable from the FlashBox. Try to run the FlashTalk Installer again, carefully following the instructions in Installing FlashBox Software, *Chapter 2*.

FlashTalk fails to load on start up

Symptoms of this problem may also appear as an error when you select FlashTalk in the Control Panel, or you may see the FlashTalk icon crossed-out on startup, as in Figure A-1.



Figure A-1. Icon Crossed-Out.

Try these solutions to solve the problems:

- Make sure that FlashTalk is selected in the Control Panel **Network** icon.
- If you installed FlashTalk under MultiFinder, try installing FlashTalk under the Finder, restart your Macintosh, select FlashTalk in the Control Panel **Network** icon, and restart your Macintosh again.

- Make certain that all the FlashBox and LocalTalk-compatible cables are secure.
- If you are using InBox, other network software such as AppleShare, or if initialization files (“inits” such as Backdrop, Suitcase, On Cue, etc.) are in your Macintosh System folder, try to reinstall FlashTalk. If that fails to solve the problem, try the following steps:
 1. If you are using InBox, pull down the **Special** menu, and set startup on Finder in order to avoid InBox.
 2. Create a new folder called “inits” and drag the inits out of your Macintosh System folder to the inits folder.
 3. Restart your Macintosh.
 4. Select FlashTalk in the Control Panel **Network** icon.
 5. Drag the inits back to the System Folder. If you are using InBox, set startup on InBox.
 6. Restart your Macintosh.

At this point, FlashTalk should load properly.

FlashBox Hardware

The Light-Emitting Diode (LED) Doesn't Flash

- Make sure that your FlashBox is securely connected to the network and to your Macintosh.
- Shut down your Macintosh. Disconnect your FlashBox from the printer port, and re-connect your FlashBox securely to your Macintosh. Restart your Macintosh. Do a network-related operation and see if the light is flashing.
- Make sure that your FlashBox is securely connected to a power outlet.
- Connect the FlashBox to another Macintosh. If the LED still doesn't flash, your FlashBox may be defective. Call TOPS Technical Support.

The LED is on Solid When You Start Up Your Macintosh

- Your Macintosh printer port may be defective. Disconnect your FlashBox by following the instructions in the section Disconnecting FlashTalk, *Chapter 2*. Contact your Apple dealer.

- Connect the FlashBox to another Macintosh. If the LED is still on solid, your FlashBox may be defective. Call TOPS Technical Support.

Marginal Communications

You Don't See Improved Performance with FlashBox

If your network performance seems slower than you might expect, check the following:

- Run FlashCheck. If you see the first dialog box, which states: "The FlashTalk Software is loaded and selected on this computer," then the software is installed properly. If you see an error message, make sure that FlashTalk has been installed, selected in the Control Panel **Network** icon, and that the FlashTalk file is in the System folder. See the section FlashCheck in *Chapter 3* for more information.

If everything went well, you can click **OK** to go to the next dialog box, which should say: "The FlashBox hardware is installed and ready for operation on this computer." If you see an error message, make sure that your FlashBox is connected to the printer port, that it is powered-on, and that it is connected to the network. See FlashCheck in *Chapter 3* for more information.

If you see the two messages above, you have verified that your Macintosh is running at the FlashTalk rate. To make sure that other stations are also running FlashTalk, see FlashCheck in *Chapter 3*. If your Macintosh is communicating with PCs running FlashTalk, make sure that FlashTalk is enabled on the PC(s).

Your Macintosh may be communicating with devices on the other side of a bridge or gateway. All bridging devices transmit at the AppleTalk rate; the FlashBox adjusts to the AppleTalk rate when it encounters these devices.

Laser printing is another operation which runs at the AppleTalk rate. Again, the FlashBox sends information at the lower rate.

- Do you have non-FlashTalk-capable devices on your network? A transmitting AppleTalk node can sometimes over-write FlashTalk data on the wire, creating a significant number of

errors. FlashTalk is designed to recover from the errors but the processing required to do so temporarily slows performance to below the AppleTalk rate. You should equip each Macintosh or PC transmitting on the network with a FlashBox or a FlashCard, respectively.

- The maximum length of FlashTalk networks is shorter than standard AppleTalk networks. See the length limitations discussed under Diagnostic Tips at the beginning of this Appendix.

If you have repeaters in your network, make certain that they are set up properly. Make sure that the distance between a FlashBox and the repeater doesn't exceed 500 feet and that the maximum network length (using two repeaters) doesn't exceed 1500 feet.

- Make sure that you do not have a passive star network. A passive star network consists of many drops attached to a short trunk (like a punch-down block) without an active device like a star controller. Because there is no star controller to regenerate the signal, the AppleTalk packets often fail to reach their destination.

You should avoid having a passive star network, as shown in the figure A-1:

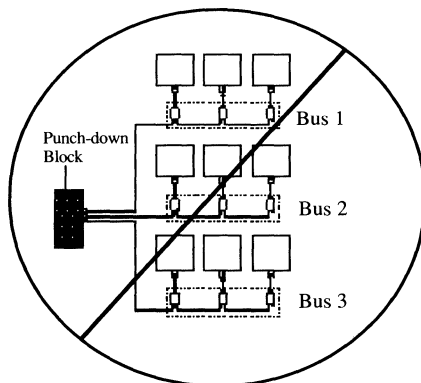


Figure A-1. Avoid passive star networks

If you have a star controller, the maximum network length of each arm should be 600 feet for TOPS TeleConnectors, PhoneNET Plus, or compatible connectors and cabling, and 400 feet for LocalTalk or compatible connectors and cabling.

- If you have a network with bridges or gateways, we suggest that the server be situated in the same network with the clients. If the server and clients are in *different* networks,

communication between the two networks will be at AppleTalk rates.

- Make sure that you don't have a closed circular network, as in figure A-2:

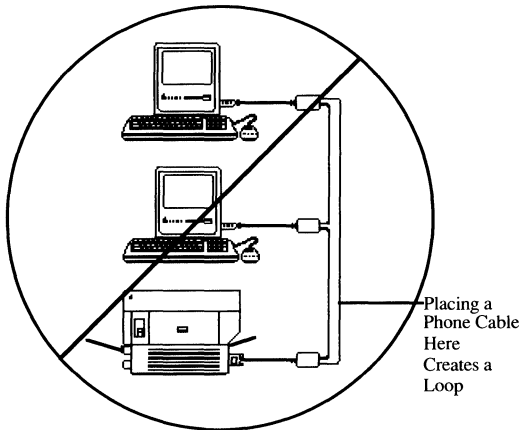


Figure A-2. Avoid closed circular networks

- Remotely launching an application may appear to be slower than expected, because the application spends more time accessing memory than it does accessing the network.
- Try turning off all computers on your network and then turning them on one by one. This helps ensure that each FlashTalk-capable computer will recognize the FlashTalk capability of other computers during the arbitration process and communicate with them at FlashTalk rate, rather than AppleTalk rate.

Stations Disappear from the Network

- Verify that your FlashBox is securely plugged into the Macintosh printer port—not the modem port. Check that the LED is flashing when your FlashBox is accessing the network. Also check that the LocalTalk (or compatible) cable is securely attached to your FlashBox and to the network.
- Make sure that other stations have volumes published.
- Run FlashCheck as described in *Chapter 3*, to determine if other nodes are running FlashTalk. FlashCheck will sample all the nodes in your network or zone to determine if they are running at the FlashTalk or AppleTalk rate. You should see a list of all the nodes running FlashTalk.

If you need to check communication with a particular node, follow the instructions in *FlashCheck: Remote Test*, in *Chapter 3*.

- De-select FlashTalk and disconnect your FlashBox to see if the problem is with the network or your FlashBox. Re-connect the LocalTalk or compatible connector to your Macintosh. If the problem still occurs, you should check the network for loose cables; check the length of your network (see the length limitations discussed under Diagnostic Tips at the beginning of this Appendix).
- If you are using Farallon PhoneNET Plus, a TOPS TeleConnector, or a similar product, make sure that your network is terminated correctly, depending on your network configuration. For example, if you have a daisy-chained network, the terminating resistors should be at each end of the network, as shown in Figure A-3:

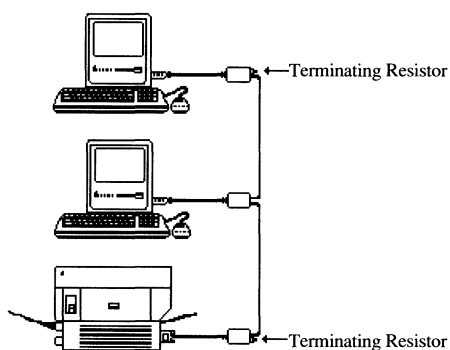


Figure A-3. Proper termination of daisy-chain networks

Improper termination is one of the most common causes of intermittent problems on the network. If you need more help with termination, please check the documentation for your connector.

- Your FlashBox may not be powered-up. Check that the power plug is securely attached to your FlashBox, and that the power supply is plugged into a wall outlet.
- The FlashTalk software may be corrupted. Copy the software to another initialized disk. Run the FlashTalk Installer and reinstall the software. Make sure that FlashTalk is selected in the Control Panel Network icon.
- Your FlashBox may be defective. Call TOPS Technical Support.

TOPS Technical Support

If you have problems with the FlashBox that are not solved by any of the tips in this appendix, you may contact TOPS Technical Support. Be sure to have the following information:

Hardware Information

- Brand names, type or model of all computers involved:
- Type of connectors and cabling, used by your network:
- Model of any printers involved:
- Physical layout of the network:

Software information

- Version numbers of all TOPS software, including FlashTalk:
- Macintosh System/Finder version:
- DOS version number, if applicable:
- Sun Operating System version, if applicable:
- Any relevant applications and their version numbers:

Problem Checklist

- Reproduce the sequence of events that lead to the problem.
- Write down any error messages that appear.
- Call from near your computer station, with a FlashBox running.

- **TOPS Technical Support 415-769-8711**

You can call TOPS at the above number, between the hours of 7:00 AM to 5:00 PM Pacific Standard Time, Monday-Friday, except 3:00 PM to 5:00 PM Wednesdays.

- **TOPS Bulletin Board Service 415-769-8774**

You can dial in to this bulletin board service 24 hours a day. The settings are: 8 bits/1 stop bit/no parity.

- **BIX Information Service**

TOPS maintains a "conference" on BIX.
Enter: **JOIN TOPS**

- **CompuServe**

Tops maintains a topic in the Apple Vendors forum and in the PC vendors forum.
Enter: **GO APPVEN** or **GO PCVEN**

- **AppleLink**

If you have access to AppleLink, you can send electronic mail to TOPS Technical Support. Address it to **D0098**.

B

Error Messages

This appendix provides an alphabetical listing of the error messages you may encounter when using FlashBox. The messages are grouped according to when the message is likely to come up: On starting up your Macintosh; on installing FlashTalk; or in running FlashCheck. After each message is an explanation and a suggested solution.

Errors on Starting Up

The following errors may occur when you are starting-up your Macintosh because of a FlashTalk failure:

Cannot find FlashBox Hardware. Cables may be loose or FlashBox may not be installed. Try Again. Cancel.

Make sure that the FlashBox is connected to the power supply and that the power supply is plugged into a power outlet. Click Try Again.

Install FlashTalk aborted startup while setting up the environment. This Macintosh is unable to run FlashTalk. It cannot transmit at the necessary speeds.

This error typically indicates an accelerator board which cannot readily access the Macintosh serial chip. Call TOPS Technical Support.

The FlashBox hardware is not operational. Check to see that the FlashBox is connected and the power is connected.

Check that your FlashBox is securely connected to your Macintosh printer port, check for a loose cable, and check that your FlashBox is powered-up.

The FlashTalk software is not loaded on this computer. Be sure that FlashTalk is selected as the network driver from the Control Panel.

Make sure that FlashTalk is selected in the Control Panel Network icon and check that there is a FlashTalk file in your Macintosh System folder.

Do you really want to disable FlashTalk?

This indicates that you have held down the option key on startup and wish to de-select FlashTalk.

An error occurred while installing the alternate AppleTalk, the built-in network will be used instead.

This error message can appear on startup as a crossed-out FlashTalk icon. It will appear if you start up your Macintosh while holding down the option key and click on the **Disable FlashTalk** button in the dialog that appears. It may also appear when you select FlashTalk in the Control Panel.

This error could occur if you are using InBox, other network software such as AppleShare, or if initialization files ("inits" such as Backdrop, Suitcase, On Cue, etc.) are in your Macintosh System folder. If there are other inits, you may have a problem loading or installing FlashTalk. First try to reinstall FlashTalk. If that fails to solve the problem, try the following steps:

1. If you are using InBox, pull down the **Special** menu, and set startup on Finder in order to avoid InBox.
2. Create a new folder called "inits" and drag the inits out of your Macintosh System folder to the inits folder.
3. Restart your Macintosh.
4. Select FlashTalk in the Control Panel **Network** icon.
5. Drag the inits back to the System Folder. If you are using InBox, set startup on InBox.
6. Restart your Macintosh.

Errors Installing FlashTalk

The following errors may occur while you are using the FlashTalk Installer:

A Macintosh with 128K ROMs is required.

The FlashBox is compatible with the Macintosh 512KE, Plus, SE, and II. You may be trying to install the FlashBox on a Macintosh 512K or 128K.

A resource can't be found.

A resource can't be added.

A resource can't be removed.

Most likely due to a bad FlashBox disk. Copy the FlashTalk files to another freshly initialized disk. Run the Installer again. If it still fails, run the Installer on another Macintosh. If the problem recurs, call TOPS Technical Support.

Install FlashTalk is unable to install. The disk is full.

The disk onto which you are attempting to install is full. The FlashTalk software needs at least 22K of free disk space. Remove some unnecessary files and run the Installer.

Install FlashTalk is unable to remove. The volume is locked.

The FlashTalk software on the target disk may be locked. Return to the desktop, click on the FlashTalk file, and pull down **Get Info** from the File menu. Uncheck the "Locked" box in the upper right-hand corner.

Install FlashTalk aborted startup while locating FlashTalk files. A FlashTalk file is missing from the Installer folder.

Make sure that all the necessary FlashTalk files are on the FlashBox disk: FlashTalk, FlashRadius, FlashTalk resources, FlashTalk II, FlashTalk INIT, Network.

Install FlashTalk encountered a non-fatal error while setting up the environment. Unable to verify the System file. Version 4.1 or greater is required.

Pull-down **About the Finder** from the Apple menu, and verify that you have System 4.1 or greater. If you have an older version, contact your Apple dealer.

Install FlashTalk encountered a non-fatal error during event processing.

Too much memory is being used by the RAM cache in the Control Panel, inits, fkeys, or MultiFinder. Try to free some memory and rerun the Installer.

Install FlashTalk is dangerously low on memory!

Too much memory is being used by the RAM cache in the Control Panel, inits (startup documents), fkeys (function keys), or MultiFinder. Move the inits out of the System Folder to another folder, restart your Macintosh, and rerun the Installer.

Install FlashTalk is unable to install. An I/O error occurred.

You may be installing with a bad disk. Try copying the FlashBox files to another disk and run the Installer. The disk onto which you are attempting to install may be full. Free at least 20K of disk space and rerun the Installer.

The directory can't be found.

Make sure that all the necessary FlashTalk files are on the FlashBox disk: FlashTalk, FlashTalk II, FlashTalk INIT, FlashRadius, FlashTalk Resources, Network.

The disk is full.

Make sure that you have at least 20K of free disk space to install the FlashBox software. Remove some unnecessary files and run the Installer.

The diskette is write-protected.

Make sure that the write-protect tab is in the lower position on the FlashBox disk.

The diskette isn't a Macintosh diskette.

Initialize the target floppy disk and rerun the Installer.

The end of file was reached prematurely.

You may be working with a bad disk. Copy the FlashTalk files to another freshly initialized disk. Run the Installer again. If it still fails, run the Installer on another Macintosh. If the problem recurs, call TOPS Technical Support.

The file can't be found.

Make sure that you are using System 4.1 or later.

The file is busy.

Too much memory is being used by the RAM cache in the Control Panel, inits, fkeys, or MultiFinder. Try to free some memory and rerun the Installer.

The file is locked.

Go to the desktop, select the FlashTalk file, pull down **Get Info** from the File menu, and see whether the "File Locked" checkbox is checked.

The resource file can't be found.

Most likely due to a bad FlashBox disk. Copy the FlashTalk files to another freshly initialized disk. Run the Installer again. If it still fails, run the Installer on another Macintosh. If the problem recurs, call TOPS Technical Support.

The volume contains a bad master directory block.

Most likely due to a bad FlashBox disk. Copy the FlashTalk files to another freshly initialized disk. Run the Installer again. If it still fails, run the Installer on another Macintosh. If the problem recurs, call TOPS Technical Support.

There's not enough memory.

You may be attempting to install the FlashBox software while in MultiFinder. If you running the FlashTalk Installer under the Finder and see this error, you can free more memory by pulling down the Control Panel from the Apple menu and setting the RAM cache to a lower value.

Too many files are open.

This error could occur if you are using InBox, other network software such as AppleShare, or if initialization files ("inits" such as Backdrop, Suitcase, On Cue, etc.) are in your Macintosh System folder. If there are other inits, you may have a problem loading or installing FlashTalk. First try to reinstall FlashTalk. If that fails to solve the problem, try the following steps:

1. If you are using InBox, pull down the **Special** menu, and set startup on Finder in order to avoid InBox.

2. Create a new folder called "inits" and drag the inits out of your Macintosh System folder to the inits folder.
3. Restart your Macintosh.
4. Select FlashTalk in the Control Panel **Network** icon.
5. Drag the inits back to the System Folder. If you are using InBox, set startup on InBox.
6. Restart your Macintosh.

This error could also occur if you attempted to install using MultiFinder. Set startup on Finder, restart your Macintosh, and rerun the Installer.

Errors Running FlashCheck

The following errors may occur while you are using FlashCheck:

Network wiring is marginal for FlashTalk between these nodes. Check that the wiring, line termination, and distances between the computers are within recommendation.

Check for proper termination, length of your network, or an improperly setup repeater or star network (see Troubleshooting, *Appendix A*).

Network wiring is unable to support FlashTalk speeds between these nodes. Check that the wiring, line termination, and distances between the computers are within recommendations.

This error should only occur on a network with very low-grade wiring or connectors, improper termination, passive stars, or excessive distances between nodes (see Troubleshooting, *Appendix A*).

Selected Test Node is Not Responding. Update Node List and Select a test node.

If you update the node list and the error still occurs, check that the station you are testing is actually operational on the network. If the remote node is a Macintosh, try the steps in *Chapter 3* to make sure that the test node is actually FlashTalk-capable. If the remote node is a PC, make sure that FlashTalk is enabled.

Selected Test Node is not able to echo. Select a different test node.

Only Macintosh Pluses with original ROMs (Read-only memory chips) should be unable to echo (data sent from one station on the network to another was not echoed back). If you experience this problem, call your Apple dealer and request the AppleTalk Network Manager patch.

Glossary

AppleTalk Bridge

A hardware device that connects two AppleTalk networks (or zones). Bridges expand the resource pool and control network traffic by passing only transmissions going from one zone to another.

AppleTalk Personal Network

A set of network communication protocols for LocalTalk cabling systems. The driver that controls how the network devices address, send, receive, and read the information transmitted over the network. (See AppleTalk zone.)

AppleTalk Zone

A way of partitioning large AppleTalk networks into smaller, more manageable groups. Dividing large networks into zones makes it easier to choose which volumes and printers you want to use since it narrows down your choices. This is particularly useful for people in the same department or physical area in an office building.

Bridge (see AppleTalk bridge)**Bus**

A network cabling configuration with a starting point and an ending point, with connection points leading to stations on the network.

Client

A station (Macintosh or PC) that uses the resources made available by servers on the network.

Ethernet

A physical network cabling system (usually consisting of shielded wire) that links computers and peripheral devices on a network. Capable of transmitting data at up to 10 megabits per second.

File Server

A station on a network that makes files available to other stations on the network.

FlashTalk

A set of communication protocols which increases the basic AppleTalk rate of 230,000 bits-per-second (bps) to 770,000 bits-per-second. The FlashBox provides the necessary hardware to clock the data rate of AppleTalk to the higher speed.

Gateway

Any hardware device that connects networks with dissimilar protocols.

Local

Files, software or hardware stored in or connected to a computer. *See also Remote.*

Local Area Network or LAN

The interconnection of computers and peripherals by wiring which allows information and hardware resources to be shared.

LocalTalk

A physical networking system made by Apple that links computers and peripheral devices together to permit communication and data transmission. Also refers to any LocalTalk-compatible cabling system.

Mounting a File Server

The process of transferring information or programs (on a LAN) from a file server and using them on a client. The folders then appear to the client as a local disk drive.

MultiFinder

System software which enables one application to process information in the background while another application is running in the foreground.

Node

Any device on the network, including computers, peripherals, printers, bridges, and specialized network devices.

Passive Star

A passive star network consists of many lines attached to a short trunk such as a punch-down block. Since there is no active device (such as a star controller) to regenerate the signal, the AppleTalk packets often fail to reach their destination.

Port

The socket into which AppleTalk plugs are connected. For example, the printer port on a Macintosh or the ports on the FlashBox.

Protocols

A set of rules governing the way communication takes place on a network. Examples are the AppleTalk and FlashTalk protocols.

RAM

RAM (random-access memory) is memory used to hold application programs while they are being executed. Turning off the computer clears the memory.

Remote

Files, hardware or software stored in or directly connected to a station on a network other than your own. *See also Local.*

Repeater

A device which regenerates electrical signals. It allows signals to travel farther along cable or phone wire.

Server

See file server.

Star Topology

A network that has a central hub to which all stations are directly connected by radiating spokes. All communications between spokes must pass through the central hub.

System File

A resource file containing the fonts, Desk Accessories, and drivers necessary for applications to run.

Terminating Resistor

A device placed at the beginning and end of a network bus to prevent reflections that cause unreliable communications.

Topology

The physical layout of a network. This refers to the arrangement of the nodes and their cable connections. Standard topologies include: bus (daisy-chain), star and ring.

Zone (see AppleTalk zone)

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Notice to Users

This equipment generates and uses radio frequency energy and, if not installed and used properly in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna of the radio or television set experiencing interference.
- Relocate the computer or peripheral with respect to the receiver; that is, separate the two pieces of equipment.
- Plug the computer or peripheral into a different outlet so that it is on a different branch circuit from the receiver.
- Check the cable connections to the computer or peripheral, particularly shielding of the cables.
- Make sure that any screws used to secure the connectors are securely fastened.
- Make sure that the outer case of the computer or peripheral is securely attached to its connecting mountings.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington DC, 20402, stock No. 004000003454.

Canadian Users

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.